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AUTHOR Cohen, Andrew D.; And Others
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ABSTRACT

This paper reports on the Redwood City study of bilingual schooling for Mexican American bilingual children (grades 3-5), a sequel to Cohen's original study (Cohen, 1975). At the end of six years of bilingual schooling, the comparison group was surpassing the bilingually-schooled children in English reading, while the Bilingual group was generally stronger in Spanish reading. In Spanish vocabulary and storytelling, the Bilingual group was stronger. In English vocabulary the results were mixed and in storytelling the Comparison group appeared to have an edge. In math, the results were mixed. Finally, the Bilingual group reported using more Spanish than the Comparison group, and more Spanish than English. The Bilingual program appeared to contribute to the maintenance of the Spanish language by encouraging the use of Spanish among the students involved. (Author)

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ED125248

# The Redwood City Bilingual Education Project, 1971-1974: Spanish and English Proficiency, Mathematics, and Language Use Over Time

## Abstract

Andrew D. Cohen, Ann K. Fathman, & Barbara Merino

This paper reports on the Redwood City study of bilingual schooling for Mexican American bilingual children (grades 3-5), a sequel to Cohen's original study (Cohen, 1975). At the end of six years of bilingual schooling, the comparison group was surpassing the bilingually-schooled children in English reading, while the Bilingual group was generally stronger in Spanish reading. In Spanish vocabulary and storytelling, the Bilingual group was stronger. In English vocabulary the results were mixed and in storytelling the Comparison group appeared to have an edge. In math, the results were mixed. Finally, the Bilingual group reported using more Spanish than the Comparison group, and more Spanish than English. The Bilingual program appeared to contribute to the maintenance of the Spanish language by encouraging the use of Spanish among the students involved.

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Introduction

The purpose of this paper is to present the findings of the Redwood City study of bilingual schooling for Mexican American bilingual children from 1972 through the spring of 1974. The discussion is intended to provide insights as to the effectiveness of the bilingual methodologies used in that program. This report will also inadvertently illustrate some of the problems that occur in attempting to do a longitudinal study of a program of this sort--suggesting the importance of thorough, well-documented studies of bilingual education programs.

In the fall of 1969, the Redwood City Title VII Bilingual Program was initiated with one first-grade classroom. The next fall (1971), a kindergarten and a first-grade class were added to the program. That fall a longitudinal study was initiated in order to follow these K-2 children through the grades. This article describes their progress over 4 years to the point at which they were in grades 3-5.

The treatment for the bilingual program varied not only from year to year but also from grade to grade. Such variation is not surprising since from the very start of the Federal ESEA Title VII programs, it was understood that the first three-to-five years would be spent developing the program. All the same, certain methodological approaches seem to have been utilized throughout. For example, teachers and aides used both Spanish and English with the children. Generally, this meant that Spanish

and English were used in the same lesson, either interchangeably (word for word, phrase for phrase, sentence for sentence) or one after the other.

During the 1971-72 school year, an attempt was made to use the alternate days approach, whereby the teacher would give a math lesson in Spanish on Monday, in English on Tuesday, and so forth (Cohen, 1975, pp. 109-110). But this method proved to be too demanding of teacher preparation time during a phase in the bilingual movement when content subject materials in Spanish were difficult to obtain.

Thus, the student was primarily being exposed to an environment in which both languages were being spoken freely by both adults. This pattern varied somewhat according to the individual teachers and aides (Cohen, 1975, pp. 116-118).

Subjects such as math, social studies, and science were introduced bilingually, even at the outset, in keeping with the teachers' simultaneous (concurrent) use of both Spanish and English. Although the intention was to introduce Spanish reading before English reading, in actuality the two were introduced almost simultaneously. Other programs wait as long as two or more years after the introduction of reading skills in the vernacular before commencing reading in the second language (Cohen and Laosa, 1975).

A comparison group was identified at a nearby school in the same neighborhood. These children received conventional English-only instruction. However, almost half of these students

also received special attention through ESL or Title I classes, or through individual tutorials.

The children in the Bilingual and Comparison groups both came from low-income families, living in that section of Redwood City, California, which had the highest concentration of Spanish-surnamed heads of households. These families represented a recent immigrant group (average 11.2 years in the U.S.) which, for the most part, had only imperfect command of English language skills (see Cohen, 1975, for more detail). The children were generally Spanish dominant or monolingual when they entered school. Comparability of the two groups was established both by family interviews and through statistical controls (i.e., analysis of covariance).

In the summer of 1972, a two-year longitudinal study of the bilingual education program in Redwood City was completed (Cohen, 1975). Among other things, the study investigated the effects of bilingual schooling on the English and Spanish language proficiency, math performance, and language use of Spanish-speaking Mexican American children grades K-3. As stated above, the program had been in operation since 1969, thus the third grade by 1972 had had three years of bilingual schooling. The study concluded that although it was too early to assess the ultimate effects of bilingual schooling in Redwood City, the early indications were that bilingual education in the Mexican American community of Redwood City was a viable, significant innovation.

In most skill areas, the bilingually-schooled children were

as proficient in English language skills as comparable Mexican American children taught only in English. The bilingually-schooled children were also slightly more proficient in Spanish language skills than the comparison children. The Bilingual group were the same or better in mathematics. Finally, the Bilingual group were using Spanish more, as verified both by students's own report, by parental report, and by direct systematic observation. It was recommended that the research design be continued to find out more about the long-range effects of bilingual schooling in this community.

Fortunately, the research effort was continued for the two years subsequent to the Cohen study, during the 1972-73 school year by Ann Fathman and during the 1973-74 school year by Barbara Merino. A full report of these results is available in the Redwood City ESEA Fourth Year Review (Fathman, 1973) and Fifth Year Review (Merino, 1974). Attrition, however, took its toll both on the students in the bilingual program and on those in the comparison group. Such attrition is not uncommon for any school or community, and the economic situation during the past few years hit particularly hard in the minority community. Families had to move on to other locations just to find work.

As children moved from the bilingual school, new students were added to the classes. The results for the bilingually schooled students reported in this paper, however, refer only to those students who had been in the program since grade 1. Thus in 1974, by grade 5, the number of original children still in the

bilingual project was reduced from 15 to 6. In grade 4 the number was reduced fr m 16 to 5. In grade 3 the number was reduced from 14 to 7. The same was true for the Comparison group of Children. This decrease in numbers over the years presents one of the greatest problems for researchers interested in program evaluation.

The paucity of longitudinal data on U.S. Title VII bilingual education programs has prompted us to issue this latest report even though the group sizes are small. Thus, these current findings can only be taken as suggestive, and by no means definitive. Means scores for these Redwood City children do give, however, some indication of trends.

Both the Fathman and the Merino studies added new kindergarten groups to the research design. However, this report will just look at results for the bilingually-schooled Mexican American children and the conventionally-schooled Mexican American children (at a nearby school) at three levels: the Pilot, Follow Up I, and Follow Up II levels (Cohen, 1975). In 1974, the Pilot group was in Grade 5 and had been in the bilingual program since grade 1. The data reported will reflect their performance in grades 3, 4 and 5. In 1974 the Follow Up I group was in grade 4 and the data reflect their performance in grades 2,3 and 4. In 1974 the Follow Up II group was in grade 3 and the data reflect their performance in grades 1,2, and 3. Also in 1974, another comparison group was used at the Follow Up II level. Thus, comparisons with this group do not reflect longitudinality, al-

though they do represent similar Mexican American children receiving English-only instruction at the same school.

Results

English and Spanish proficiency, math performance, and reported language use will be discussed in that these were the areas for which there were relatively complete data for the two years subsequent to the Cohen study.

Language Proficiency

Spanish and English Reading. One of the prime reasons expressed for initiating bilingual education programs in the U.S. was to help the minority child learn to read. The theory was that initial reading in the dominant or native language would help the child to read better in English. Have the Redwood City results over time substantiated that claim? It doesn't appear so. Rather, the Comparison group appear to be outdistancing the bilingually-schooled children more each year in reading English, particularly at the Follow up I and II levels (see Table 1). Differences between Bilingual and Comparison students were not significant in the spring of 1972, but were in favor of the Mexican American children schooled exclusively in English. By spring of 1974, the trend reached statistical significance at the two Follow Up levels. These findings suggest that reading taught bilingually may not facilitate reading in English; that instead, children who learn to read first and exclusively in English appear to do better in English reading over time.

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Insert Table 1 about here

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The difference in teaching may also have influenced the trend. In the bilingual program reading in English and Spanish were introduced to Spanish speakers almost simultaneously, very possibly to the detriment of average or poor readers. The Comparison school was known to have excellent English reading teachers from the start (see Cohen, 1975, Ch. 6). Although highly motivated and enthusiastic, the bilingual program's teachers were not as experienced in teaching English reading, nor had they generally had as much teaching experience altogether. Thus, the findings need not indicate that bilingual education is incapable of making good English readers out of readers who start in their vernacular or bilingually, but rather that specific bilingual methodologies may not be successful under certain conditions.

Another goal of bilingual schooling is to make the children better able to read in their native language. The claim is that without formal schooling in his native language, a minority child in the U.S. is not likely to become literate in it. Have the Redwood City results substantiated this claim? The results are mixed. On the one hand, the bilingually-schooled Pilot students did read Spanish significantly better than the Pilot Comparison group at the end of grade 5 (1974) (see Table 2). Furthermore, at the end of grade 3 (1974) the Bilingual (Follow Up II) group showed a slight advantage over the Comparison group, a trend that was not found at the end of the 1972 and 1973 years. On the other hand, in 1974 at the end of grade 4 the Bilingual (Follow Up I) group lagged behind the Comparison group, a tendency which had increased each year.

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Insert Table 2 about here
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A number of explanations might be given for the fact that one group of Mexican American children from the Comparison school, where no instruction was given in Spanish, scored higher on Spanish reading than the bilingual group. These children may have been transfering strong English reading skills to Spanish reading. It is also possible that these children (only 5 in the 1974, 4th grade Comparison group) were getting help in Spanish reading at home where Spanish was used. Also there is some indication that many of the children in the Comparison group spent summers in Mexico where they may have learned to read in Spanish. Thus, there are many other variables besides formal instruction which might affect a child's ability to read Spanish.

It cannot be argued that the Bilingual group were at a disadvantage in taking standardized tests of reading in English and Spanish (Guidance Testing Associates' Inter-American Test of Reading and Prueba de Lectura) since the Bilingual and Comparison groups were from similar types of homes and had similar language backgrounds and test-taking skills (see Cohen, 1975). More needs to be known about how minority children achieve reading skill in their native language without formal training. In terms of writing skills, Cohen (1975) did establish that third-grade Mexican American children unschooled in Spanish were generally unable or at least unwilling to write compositions in Spanish, however.

Spanish and English Oral Language. One aim of a bilingual

education program is to foster the maintenance and development of oral language skills in the native language while promoting acquisition of oral skills in the second language. The Spanish and English vocabulary of the children was determined by using a vocabulary task of Word Naming by Domain (home, neighborhood, school, and church). Their storytelling ability was determined by a Storytelling Task based on pictures (Cohen, 1975). Longitudinal data on these tasks were collected over the years in English and Spanish.

How did the Spanish vocabulary of the bilingually-schooled children develop in comparison to that of children schooled conventionally? Not progressively, but ultimately better for all groups. At the Pilot level, group means were the same in the spring of 1972. Then the Comparison group was slightly ahead in the spring of 1973. Finally, the Bilingual group emerged ahead in the spring of 1974, but not at a level of statistical significance. At the Follow Up I and II levels (grade 3 and 4 groups in 1974), the Comparison group was stronger both at the end of 1972 and 1973, but the Bilingual group was slightly ahead in the spring of 1974. Since the Bilingual group was being exposed to Spanish in school, one might not expect them to score below the Comparison group at all, but the 1974 results are consistent with the expectation that the Spanish vocabulary of those in the bilingual program should increase through the grades (see Table 3).

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Insert Table 3 about here

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What effect did bilingual schooling have on storytelling ability in Spanish? Generally, the Bilingual group came out slightly better. The Bilingual Pilot group had somewhat of a lead over the Comparison group by 1973 and maintained it by 1974. The Bilingual Follow Up I group developed a slight advantage over the Comparison group, while the Bilingual and Comparison groups at the Follow Up II level came out the same. However, none of these differences achieved statistical significance[1] (see Table 4).

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Insert Table 4 about here

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How did the English vocabulary of the Bilingual group develop over time in comparison to conventionally-schooled children? The results are mixed. The Pilot and Follow Up I Comparison groups were stronger, both at the end of 1972 and 1973, with the Pilot Comparison group having a statistically advantage in 1973. But at the end of 1974, a reversal took place and the Bilingual Pilot and Follow Up I groups now scored better. At the Follow Up II level, the Comparison group outscored the Bilingual group in 1972 and went on to attain significantly higher mean scores both in 1973 and 1974 (see Table 5). Thus, at this level, the Bilingual group students didn't seem to make up the English vocabulary lag that they made up at the two higher levels. Perhaps it would still take more time to do so.

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1. Statistical significance is more unlikely with small samples and even significant differences may be questionable.

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Insert Table 5 about here
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What effect did bilingual schooling have on English story-telling ability? It didn't appear to enhance it. The Comparison group had a slight edge over time, and particularly by the end of 1974, at all three levels. Thus, the data don't seem to support the assumption that if a child develops strong speaking skills in his own language, these skills will enhance the acquisition of speaking skills in the second language. The advantage that the Comparison students had in English vocabulary and storytelling could be explained in that the Comparison children had a greater need and opportunity to speak English since it was the only language of their school environment. It has been argued that the requirement to speak English may be counter-productive--that forcing children to use a second language may turn them off to the second language (U.S. Commission on Civil Rights, 1972). This doesn't seem to have been the case with this Comparison group. Furthermore, a common concern of critics of bilingual education is that letting a child use his native tongue in school will lessen his motivation to perfect his skills in the second language. This may be too extreme an interpretation of what has happened to the English skills of the Mexican American children schooled bilingually in Redwood City over the years, but the findings here, however meager the data, do give food for thought.

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Insert Table 6 about here
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Obviously more research is needed on a longitudinal basis with much larger groups before interpretations like those above could be considered anything but conjecture.

Mathematics

An aim of bilingual schooling is to provide the concepts to the child in his dominant language to ensure concept acquisition, especially while he is learning his second language and adjusting to school. What were the results in Redwood City? Mixed. After 1972, the Pilot Bilingual group tested behind the Comparison group and stayed behind. From the spring 1972 results which showed the Bilingual Follow Up II group significantly ahead of the Comparison group, one might have predicted a continuing trend in that direction. However, two years later the Bilingual Follow Up II group had fallen behind the Comparison group. Only the Bilingual Follow Up I group appeared to reverse a negative trend. In the spring of 1973, the Follow Up I Comparison group tested significantly stronger than the Bilingual group. Then, in 1974, the Bilingual Follow Up I group closed the gap but still remained behind the Comparison group (see Table 7).

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Insert Table 7 about here

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The tests of math have always been in English, although in early grades certain concepts were translated into Spanish. Perhaps, then, there is a language-of-test factor here. But all the same, these results might be supporting the contention made by Saville and Troike (1971) that math should be taught only in English "since advanced work in math will probably be done in this

language and later switching of these skills is difficult" (p. 26). Unfortunately there isn't as yet a research base to provide evidence either refuting or supporting pronouncements such as this one by Saville and Troike.

Language Use

Bilingual programs such as the one in Redwood City have been designed to help promote the minority language by endorsing its use as a legitimate medium for instruction in the classroom. A Language Use Inventory (Cohen, 1975) was used to collect student report of their language use with others (parents, siblings, friends) and of the language their family (parents, older and younger siblings) used with them. What influence has the Redwood City program seemed to have over time on Spanish language use?

The results in 1972 suggested that the bilingual program may, in fact, have been helping to maintain Spanish use among the participants. The participants reported using Spanish more than English; they also reported using Spanish more than Comparison children reported doing so (Cohen, 1975). The data for the two subsequent years tended to reinforce that trend. Even with the absence of 1974 data for the original Comparison group at the Follow Up I and II levels (another school was used instead), the trends were still consistent with the 1972 findings. Students going through bilingual schooling reported using more Spanish than English through the grades and reported that others used more Spanish than English when talking to them. The Comparison group generally reported less use of Spanish than English over time,

except at the Follow Up I level where, in the spring of 1973, the Comparison group reported using more Spanish than the Bilingual group. The reasons for this increase from 1972 are unclear.

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Insert Table 8 about here

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In summary, the Comparison group was surpassing the bilingually-schooled children in English reading, while the Bilingual group was generally stronger in Spanish reading. In Spanish vocabulary and storytelling, the Bilingual group was stronger. In English vocabulary the results were mixed and in storytelling the Comparison group appeared to have an edge. In math, the results were mixed. Finally, the Bilingual group reported using more Spanish than the Comparison group, and more Spanish than English.

It does appear that the Bilingual program in Redwood City generally contributed to the maintenance of the Spanish language by encouraging the use of Spanish among the students involved. The fact that the students were given formal schooling in Spanish and used Spanish as a vehicle for learning the subject matter appeared to act as an incentive for them to continue to use Spanish regularly in a variety of social interactions. These results would appear most encouraging to those concerned about minority language maintenance in the U.S. However, if continued endorsement of and resultant use of the minority language is somehow to the detriment of English language development, as may be the case in Redwood City, then perhaps more thought should

be given to transitional type programs. Yet here again it is important to qualify that the Redwood City program represented simply one set of teaching methodologies. As mentioned above, the Redwood City program generally employed the concurrent approach to bilingual schooling--with simultaneous use of both languages by the same adult in the same lesson in a variety of ways (Cohen, 1975). And, in fact, the methodology itself was subject to constant changes as the program developed and modified its processes.

As noted at the outset of this article, the lack of full Bilingual and Comparison groups over time precluded the possibility of identifying definitive patterns over time. But even these findings would suggest that we should look more carefully at particular bilingual education methodologies. A recent paper by Cohen and Laosa (1975), called "Different Approaches to Second Language Instruction: A Research Model," notes that for any given approach to literacy and to instruction in subject matter in a bilingual context, there is some research report that attests to its effectiveness. The authors stress the importance of looking more closely at the specific educational treatments (methods, teacher characteristics, classroom atmosphere), at the characteristics of the students in the samples investigated, at the contexts in which the program took place, at the research designs and methods (instruments and administration procedures) employed, and at the subtle interaction of treatments, student characteristics, context, and research design.

In Redwood City, the concurrent approach being utilized

meant that the same teacher was using both languages interchangeably in the same lesson. Cohen (1975, Ch. 8) does document that this method may have produced at least one possible negative effect, namely more negative transfer from English in the Spanish of the Bilingual group. Students in the Comparison group didn't show as much negative transfer from English in their Spanish, which they were only in contact with out of school. But as Cohen and Laosa (1975) point out, there are many variables that could contribute to the outcomes for any community.

In the Redwood City study, student characteristics were not really "controlled." There would have had to be random assignment of matched pairs of students to experimental and control groups for there to have been any real control. However, the school principal was unwilling to allow such systematic denial of bilingual schooling to half the "needy" children. With respect to the school treatment, extent of teacher experience was not controlled, in that the Comparison group teachers had been teaching longer. Also, no attempt was made over the years in Redwood City to assess the effect of individual teaching styles on outcomes.[1]

Perhaps it is a difficult, if not hopeless task to isolate and study only selected variables over time. All the same, if certain bilingual methodologies (e.g., alternate day instruction, A.M.-P.M. or dual language team teaching, or partial or

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1. Cohen (1975, Ch. 6) details certain aspects of the school programs at the Bilingual and Comparison schools.

full immersion education) are said to be more effective for certain groups of students in certain contexts, then we may want programs to adopt these more successful methodologies. The time has come to look more closely at different methodologies for bilingual schooling and to back up pronouncements not only with anecdotal, impressionistic accounts, but with more rigorous research as well.

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Table 1

English Reading

Pilot Level

| | Mean 1972‡ | Mean 1973‡ | Mean 1974‡ |
|---|---|---|---|
| Bilingual | 56.4<br>N = 15 | 27.7<br>N = 14 | 34.5<br>N = 7 |
| Comparison | 64.3<br>N = 14 | 31.3<br>N = 11 | 40.0<br>N = 7 |

Follow Up I Level

| | Mean 1972† | Mean 1973‡ | Mean 1974‡ |
|---|---|---|---|
| Bilingual | 31.6<br>N = 16 | 53.2<br>N = 12 | 17.0<br>N = 7 |
| Comparison | 33.6<br>N = 15 | 71.7<br>N = 9 | 39.9*<br>N = 7 |

Follow Up II Level

| | Mean 1972† | Mean 1973† | Mean 1974‡ |
|---|---|---|---|
| Bilingual | 22.3<br>N = 14 | 36.6<br>N = 7 | 43.1<br>N = 7 |
| Comparison | 24.9<br>N = 16 | 56.6<br>N = 9 | 71.0*<br>N = 7 |

* $p < .05$, T Test

† = Level 1, Inter-American Test of Reading

‡ = Level 2, " " " " "

‡ = Level 3, " " " " "

Table 2

Spanish Reading

Pilot Level

| | Mean 1972‡ | Mean 1973‡ | Mean 1974‡ |
|---|---|---|---|
| Bilingual | 52.3* N = 15 | 24.1 N = 14 | 33.5* N = 7 |
| Comparison | 40.1 N = 14 | 21.3 N = 11 | 13.7 N = 7 |

Follow Up I Level

| | Mean 1972† | Mean 1973‡ | Mean 1974‡ |
|---|---|---|---|
| Bilingual | 47.4 N = 16 | 46.2 N = 11 | 13.8 N = 5 |
| Comparison | 50.6 N = 15 | 51.6 N = 8 | 21.4 N = 5 |

Follow Up II Level

| | Mean 1972† | Mean 1973† | Mean 1974‡ |
|---|---|---|---|
| Bilingual | 27.0 N = 14 | 38.4 N = 7 | 49.0 N = 7 |
| Comparison | 28.6 N = 16 | 38.4 N = 7 | 41.0 N = 7 |

* $p < .05$, T test

† = Nivel 1, Prueba de Lecture Inter-Americana

‡ = Nivel 2, " " " " "

‡ = Nivel 3, " " " " "

Table 3

Spanish Word Naming by Domain

Pilot Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 34.3<br>N = 15 | 33.1<br>N = 6 | 48.0<br>N = 6 |
| Comparison | 34.8<br>N = 14 | 41.1<br>N = 6 | 33.5<br>N = 5 |

Follow Up I Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 28.4<br>N = 16 | 25.1<br>N = 6 | 38.8<br>N = 6 |
| Comparison | 36.0<br>N = 15 | 28.1<br>N = 6 | 32.8<br>N = 6 |

Follow Up II Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 26.2<br>N = 14 | 18.9<br>N = 6 | 22.3<br>N = 6 |
| Comparison | 30.8<br>N = 16 | 32.1<br>N = 6 | 20.5<br>N = 6 |

Table 4

Spanish Storytelling Task

Pilot Level

| | Mean 1972 (Maximum=25) | Mean 1973 (Maximum=30) | Mean 1974 (Maximum=30) |
|---|---|---|---|
| Bilingual | 19.6<br>N = 15 | 27.2<br>N = 6 | 22.8<br>N = 5 |
| Comparison | 17.9<br>N = 14 | 23.0<br>N = 6 | 15.4<br>N = 5 |

Follow Up I Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 19.1<br>N = 16 | 25.0<br>N = 6 | 22.0<br>N = 6 |
| Comparison | 20.3<br>N = 15 | 25.0<br>N = 6 | 17.0<br>N = 4 |

Follow Up II Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 19.2<br>N = 14 | 24.4<br>N = 7 | 18.6<br>N = 5 |
| Comparison | 19.9<br>N = 16 | 22.9<br>N = 7 | 18.5<br>N = 5 |

Table 5

English Word Naming by Domain

Pilot Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 36.8<br>N = 15 | 35.8<br>N = 6 | 53.7<br>N = 6 |
| Comparison | 38.0<br>N = 14 | 56.2*<br>N = 6 | 43.8<br>N = 5 |

Follow Up I Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 30.8<br>N = 16 | 22.2<br>N = 6 | 46.2<br>N = 6 |
| Comparison | 39.7*<br>N = 15 | 29.3<br>N = 6 | 34.5<br>N = 6 |

Follow Up II Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 23.2<br>N = 14 | 15.0<br>N = 6 | 22.7<br>N = 6 |
| Comparison | 33.7**<br>N = 16 | 34.3**<br>N = 6 | 46.8**<br>N = 6 |

* $p < .05$, T test

** $p < .01$, T test

Table 6

English Storytelling Task

Pilot Level

| | Mean 1972 (Maximum=25) | Mean 1973 (Maximum=30) | Mean 1974 (Maximum=30) |
|---|---|---|---|
| Bilingual | 19.5 N = 15 | 22.5 N = 6 | 22.6 N = 5 |
| Comparison | 19.9 N = 14 | 23.5 N = 6 | 25.7 N = 5 |

Follow Up I Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 18.3 N = 16 | 20.8 N = 6 | 20.5 N = 6 |
| Comparison | 17.3 N = 15 | 19.0 N = 6 | 21.8 N = 4 |

Follow Up II Level

| | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|
| Bilingual | 15.8 N = 14 | 18.0 N = 7 | 17.8 N = 5 |
| Comparison | 17.4 N = 16 | 21.7 N = 7 | 20.5 N = 5 |

Table 7

Mathematics

Pilot Level

| | Mean 1972† | Mean 1973‡ | Mean 1974‡‡ |
|---|---|---|---|
| Bilingual | 152.0<br>N = 15 | 34.0<br>N = 14 | 53.4<br>N = 7 |
| Comparison | 151.4<br>N = 14 | 41.4<br>N = 11 | 64.9<br>N = 7 |

Follow Up I Level

| | Mean 1972† | Mean 1973‡ | Mean 1974‡‡ |
|---|---|---|---|
| Bilingual | 139.4<br>N = 16 | 31.7<br>N = 11 | 70.1<br>N = 7 |
| Comparison | 146.1<br>N = 15 | 43.4**<br>N = 8 | 72.0<br>N = 7 |

Follow Up II Level

| | Mean 1972† | Mean 1973 | Mean 1974‡‡ |
|---|---|---|---|
| Bilingual | 135.2**<br>N = 14 | ----- | 52.5<br>N = 6 |
| Comparison | 131.8<br>N = 16 | ----- | 76.5<br>N = 6 |

** $p < .01$, T test

† = Cooperative Primary Test, Form 12

‡ = Cooperative Primary Test, Form 23

‡‡ = Science Research Associates

‡‡‡ = California Test of Basic Skills, Form S. Level 1

‡‡‡ = California Test of Basic Skills S, Level 2

Table 8

Language Use Reported by Students

Pilot Level

| | | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|---|
| Student Use | Bilingual (B) | 7.1 N = 15 | 8.3 N = 6 | 7.6 N = 3 |
| | Comparison(C) | 6.8 N = 14 | 6.5 N = 2 | 5.1 N = 6 |
| Family Use | B | 6.9* N = 15 | 5.8 N = 6 | 6.6 N = 3 |
| | C | 6.1 N = 14 | 6.0 N = 2 | 5.5 N = 6 |
| Total | B | 14.0 N - 15 | 14.1 N = 6 | 14.2 N = 3 |
| | C | 12.9 N = 14 | 12.5 N = 2 | 10.6 N = 6 |

Follow Up I Level

| | | Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|---|
| Student Use | B | 8.4 N = 16 | 7.1 N = 12 | 6.5 N = 3 |
| | C | 8.4 N = 15 | 9.6 N = 8 | --- |
| Family Use | B | 6.8 N = 16 | 7.1 N = 12 | 7.6 N = 3 |
| | C | 7.1 N = 15 | 8.0 N = 8 | --- |
| Total | B | 15.2 N = 16 | 13.3 N = 12 | 14.1 N = 3 |
| | C | 15.5 N = 15 | 17.1 N = 8 | ---- |

* pc. 05, F test

Table 8 (Contd)

| | | Follow Up II Level Mean 1972 | Mean 1973 | Mean 1974 |
|---|---|---|---|---|
| Student Use | B | 10.3 N = 14 | 9.3 N = 10 | 8.0 N = 3 |
| | C | 7.4 N = 16 | 5.0 N = 2 | --- |
| Family Use | B | 7.9 N = 14 | 7.4 N = 10 | 6.6 N = 3 |
| | C | 6.6 N = 16 | 4.0 N = 2 | --- |
| Total | B | 18.2 N = 14 | 17.0 N = 10 | 14.6 N = 3 |
| | C | 14.0 N = 16 | 9.0 N = 2 | ---- |